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Activities of  
Bureau of Animal Industry  
Veterinarians in

# Building Up the Nation's Ten-Billion Dollar Live-Stock Industry

Including Timely Facts  
and Figures of  
Public Interest

WASHINGTON, D. C.

JUNE, 1934

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Bureau of Animal Industry Veterinarians

IN

Building Up the  
Nation's Ten-Billion Dollar  
Live-Stock Industry



Including Timely Facts and Figures  
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## FOREWORD.

May 29, 1919.

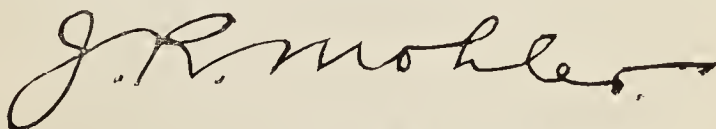
TODAY the Bureau of Animal Industry completes its 35th year of service. From the original staff which consisted of a chief, one clerk and a force limited to not to exceed twenty persons, the bureau has grown steadily until it has become one of the largest and most useful organizations in the public service.

With a personnel which now averages close to 5,200 employees, the bureau carries on its activities in connection with all phases of live-stock production and conservation and related industries, through 19 divisions and offices, with ramifications extending into every State of the Union and into foreign countries.

Responsibility for the success of the work rests largely on the Bureau's veterinarians, numbering about 1,700, who, with the various weapons known to science are combating enemies of the Nation's live-stock industry and through the meat inspection service are protecting the public health.

In a broad way the service rendered by our veterinarians is recognized, but frequently we find how little the general public knows of some branches of the Bureau work, and many of our own employees have an incomplete knowledge of its purpose, scope, and policies. This is due probably to the fact that the Bureau has conducted its operations quietly and without ostentation, although it has been suggested repeatedly that more publicity be given its achievements. As Chief of the Bureau I am pleased to know that such a feeling prevails,—that we have much more of interest to say than has been said.

The action of the National Association of the Bureau of Animal Industry Veterinarians in publishing this interesting and instructive series of articles is commendable and it is believed that the information contained will prove to be beneficial both to the employees of the Bureau and to the public.

A handwritten signature in dark ink, reading "J. R. Mohler", with a long, sweeping horizontal stroke extending to the right.

*Chief, Bureau of Animal Industry.*

## PURPOSE OF THIS PUBLICATION.

This series of eight articles on the work of Bureau veterinarians in the control and eradication of live-stock diseases was written by Mr. C. E. Gapen, a well-known agricultural journalist, in collaboration with Bureau officials.

The motive which prompted the Association to have these papers prepared for publication is that they may historically record an account of the stewardship of the officials charged with the national duties of suppressing infectious diseases of live-stock and the maintenance of our "Ten-Billion-Dollar Industry" upon a safe and sound foundation.

The objects of the National Association of Bureau of Animal Industry Veterinarians are: to be of service to the live-stock industry of the United States, to stimulate public interest in the activities of the Bureau, to promote the professional efficiency and material interests of the Bureau veterinarians, to cooperate with the American Veterinary Medical Association and other recognized veterinary and live-stock sanitary associations.

These articles have been published throughout the United States through the liberality of the public press, but are being issued in this concise form so that they may be conveniently preserved for ready reference. Trusting that they will serve the purpose for which they are intended, we remain

Very truly yours,

JOHN A. KIERNAN, *Chairman*, Washington, D. C.,

JAS. FLEMING, Kansas City, Kansas,

JOHN D. DE RONDE, New York, N. Y.,

W. K. LEWIS, Columbia, S. C.

*Committee on Legislation and Publicity.*



## PROTECTING A TEN-BILLION-DOLLAR INDUSTRY.

At first thought it may seem foolish to ask a man what he would do were he suddenly to come into possession of 75,000,000 hogs, 50,000,000 sheep, 69,000,000 cattle and 26,000,000 horses and mules, but perhaps it isn't. Uncle Sam, who is the most extensive up-to-date farmer in the world, owns that much live-stock, and for good measure there is a large flock of poultry scratching round the place. Every man who is a stockholder in this concern may do well to try to put himself in fancy in the place of this wealthiest of stockmen who in this particular business alone is ten times a billionaire.

Well, what would you do? Count 'em? No, that doesn't look quite like the first job. The chances are that you would first make sure that the herds and flocks were reasonably safe from contagious diseases. In other words you would want some insurance—not insurance in the ordinary sense, but real protection that would actually prevent loss. The greater the live-stock population the more necessary is a permanent plan of defense and capable men to carry it out. It is one of the first essentials of good business.

When the live-stock industry of America developed to such an extent that outbreaks of disease became a serious menace to the welfare of the country steps were taken to reduce the danger. It was an outbreak of pleuro-pneumonia in cattle that was the direct cause of the establishment of the Bureau of Animal Industry. That Bureau now has many more duties, but preventing diseases from entering the country, checking the spread of those already here and protecting the public against products of diseased animals is a large part of the work and requires the services of 1,700 trained veterinarians. The class of work that these men perform may be judged by the requirements they must fulfill. At present all men entering a veterinary college must have had at least two years of high school training. Those entering next year must have three years, and thereafter no man may enter one of these schools if he has not had a full high school course of four years. The course at a veterinary college, as recognized by the American Veterinary Medical Association, the War Department,

the U. S. Civil Service and the U. S. Bureau of Animal Industry, must extend through four years, nine months to the year, which puts graduates on a par with graduates of universities. Many of the men who occupy the more responsible positions were graduates of colleges and universities before taking up their special line of work.

### Organization and Early Work of Bureau.

Since 1884, when an act of Congress established the Bureau of Animal Industry and Dr. D. E. Salmon was appointed chief, the American live-stock industry has been protected from plagues of all sorts from without the borders of the country, and those already here are gradually being conquered. The most destructive diseases, such as foot and mouth and rinderpest, which exact an enormous toll every year in some foreign countries, have been prevented by this country's system of policing from ever gaining more than a temporary hold on our farms. Rinderpest has never gained entrance. No thoughtful man can doubt that the establishment of this Bureau in the nick of time has prevented the cost of food production from being much higher than at present.

If hog cholera could be eliminated—and there is every reason to believe that it can be done—how much more efficient would be the farms of the great Corn Belt and those of other sections that are now larding the incomes of their owners.

A report of the United States Live-stock Sanitary Association estimates the average losses from cholera at \$50,000,000 a year for the last forty years, which means that losses have been much greater in later years on account of the large increase in the number of swine. That annual loss represents 4 per cent interest on an investment of \$1,250,000,000. In forty years the loss has amounted to \$2,000,000,000, nearly twice as much as the theoretical investment.

In 1914 the swine industry paid a toll of \$75,000,000 to this devastator of herds. But there is encouragement. The use of anti-hog-cholera serum, a preventive developed by the Bureau of Animal Industry, is increasing rapidly. The loss during the year ending March 31, 1918, is estimated to be \$32,000,000, a reduction of 60 per cent in less than five years. In Iowa, the hog hub of

the world, nearly 3,000,000 hogs died of cholera in 1913. In 1917 the loss was a little less than 189,000. In that State alone twenty Federal veterinarians are at work continually investigating outbreaks of cholera, establishing quarantine and applying sanitary measures for the control of the disease, encouraging the use of serum, and assisting in the reduction of cholera losses.

Some spigot economists look upon the expenditure of \$500,000 annually to fight hog cholera as an extravagance, but when we consider that the smallest annual losses recorded was sixty times this amount it begins to look as if State and Federal authorities should not hesitate to ask for more funds and to pay large enough salaries to hold the experienced men.

The spectacular defeat of the cattle tick in the Southern States is a wonderful chapter in the history of the fight against live-stock pests and plagues. The first appropriation for this work came in 1906 and now, twelve years later, nearly seventy per cent of the wide territory originally infected is free and ready for the development of a great live-stock industry.

### **An Epoch-Making Discovery.**

A Bureau of Animal Industry official made the all-important discovery that Texas fever is caused by an organism transmitted by the cattle tick. Another Bureau officer worked out the life history of this insect, enabling others of his profession to develop practical methods of eradication. With very few exceptions veterinarians have directed the work of eradication right down to the individual farm. But they have not dared to estimate what the results mean in real money to the South and in food for the whole country. They are too conservative for that. But even a real estate promoter would hardly be apt to put the figure too high.

One of the most widespread and costly diseases of domestic animals is tuberculosis. The cattle and swine industries suffer enormously year after year. The president of the Chicago Live-stock Exchange recently estimated that the loss every twelve months is equal to seventy trainloads of live-stock of forty cars each, mostly hogs. Men in the Bureau of Animal Industry estimate that the country loses \$40,000,000 every year as a result of this slow moving but persistent plague. For years but small progress was

made toward getting it under control, but during the past year the accredited herd system has been applied nationally by the Bureau of Animal Industry in cooperation with the State live-stock sanitary authorities and the United States Live-stock Sanitary Association. The fight is now being waged on the principle that eradication of tuberculosis is an economic question. Money has been appropriated by Congress for the purpose of partly reimbursing owners of cattle whose animals have been slaughtered in the campaign for clean herds. Herds that come up to the requirements receive a certificate of approval from the Bureau. Cooperative work has already been started in forty States. After one year of work under the new plan 289 breeders have had their herds accredited. More than 1,400 herds have passed the first test. There are 3,320 grade herds and 867 herds of pure bred under supervision being prepared for the test. Altogether there are about 6,000 herds under supervision, a fair indication that the system finally devised is making a strong appeal to cattle owners. As more States arrange to take advantage of Federal assistance it will be necessary for Congress to appropriate more money to help reimburse owners for animals that must be slaughtered and to employ the necessary experts.

### **Nation Demands Inspected Meats.**

Of all the activities of the Government veterinarians that of meat inspection is probably best known to the public. This work will continue to be of vast importance so long as disease is so widespread among our farm animals. The food supply must be protected from diseased or otherwise undesirable meat. The great scope of this work of protecting the consumer's meat supply is evident when we consider that inspection is maintained at about 850 plants and that every year nearly 60,000,000 animals are given both the ante-mortem and post-mortem examinations. The information obtained by the inspectors is not only useful in protecting the food supply, but it provides the most conclusive argument for increased work and expenditures in eradicating animal diseases. What we can afford to pay to eradicate them any man can figure out for himself when he knows that practically a quarter-million carcasses are condemned every year as unfit for human food.

## Battles Against Foot-and-Mouth Disease Won.

The battle against the outbreak of foot-and-mouth disease in 1914 is still fresh in the memories of stockmen. It cost the country millions of dollars to kill the infection, but as a result our herds are free from this destructive scourge. Several outbreaks have been stopped in the past and no one knows how many have been prevented from entering the country by our quarantine service. Right at this time there is an outbreak in England, but it is not probable that one droplet of the virus will get by our quarantine.

At one time scabies of sheep and cattle levied a big tax on the industry, but the parasite causing this disease is now pretty well under control. Millions of animals are inspected each year and several millions are dipped. Dourine, a dangerous disease of horses in large areas of the West, is being brought under control rapidly and the prospects are that it will soon be eliminated except on some of the Indian reservations where the work is exceedingly difficult. Contagious abortion, which probably causes an even greater monetary loss among cattle than tuberculosis, is not yet well understood, but scientists of the Bureau are continually making investigations and tests with a view toward developing an immunizing agent or finding means for preventing infection.

This brief review of the work that has been done or is being done to protect the live-stock industry of America can give only a meager idea of the complexity of the job that is before our Government veterinarians who act as police and secret service, one might say, who guard our cattle, horses, hogs and sheep from alien enemies. To weaken this force would seem like an economic crime, but it is being weakened to a dangerous extent. For the last four or five years the Bureau of Animal Industry has been losing many of its very best men. They have gone into private biological laboratories, to serum producing plants, they have taken up ranching or have gone into other commercial enterprises. The exodus has not been caused so much by the lure of the dollar as by the unceasing pressure of the cost of food, clothing and house rent. And when an old friend, a practicing "vet," says he is making as much in a month as he could make in a year if he were "working for the Government" some man is apt to wonder whether he is



doing the right thing by his family, and finally he concludes that he isn't.

But are we going to let a ten-billion-dollar industry run along without insurance?

## CONQUERING THE HOG'S GREATEST ENEMY— CHOLERA.

One thing that made it possible for the American farmer to keep the Allies supplied with meat without great inconvenience to our own people was the fact that within the last few years the State and Federal authorities and those who have been working with them have learned a good deal about handling hog cholera. The pig is the emergency meat producer and when the farmers were called upon to turn out more meat, plans were immediately made to increase the number of swine. This increase was made effective but if the old bugbear to the industry had been permitted to put in such destructive blows in the last three or four years as it did in 1913 and 1914, we would have experienced many more porkless days.

The fact that the war is over should lead no one to believe that the fight against hog cholera can be slackened in the least. The task has just begun in earnest and, according to the veterinarians in the Bureau of Animal Industry of the United States Department of Agriculture, the ultimate object is absolute elimination of the disease from American farms. However, complete eradication can hardly be expected for a number of years, at least, unless a greater number of farmers become better boosters and more considerate neighbors than at present.

The magnitude of the undertaking ahead of the veterinarians and others on whose shoulders rests the responsibility of controlling the disease and gradually stamping it out, becomes more apparent when we consider the wide territory over which it has spread and the long period over which it has exacted enormous toll from our herds of swine. The saving that has resulted from the efforts of the veterinarians of the Bureau of Animal Industry, in the last few years, in cooperation with State and practicing veterinarians, can

not be overestimated and is not fully realized by the public. Senator Kenyon of Iowa, in discussing before Congress some years ago the losses from hog cholera, presented the matter in a convincing manner and pointed out that for the last forty years the loss due to this disease had averaged \$50,000,000 annually. Since this drain on the industry had been so regular, he compared the annual loss to the returns from an annual investment of \$1,250,000,000 at 4 per cent interest, and stated that this loss, compounded annually, represented an amount sufficient to build a transcontinental railroad or several canals like the one we put through the Isthmus of Panama.

The fact that this loss has a direct bearing on the cost of living and at times has threatened the safety of a great industry, a fight has been waged the last few years to produce more hogs and protect them against cholera. What is being accomplished in the control of hog cholera may be read plainly in statistics. Last spring we had very close to 75,000,000 hogs in the country, the largest number ever raised, and the loss from cholera for the last year has been the lowest on record—39 for every 1,000 hogs. Assuming that these animals were marketed at an average weight of 200 pounds at the prevailing price for the year, this crop has returned to the producers about two and a quarter billion dollars. If hog cholera had raged last year as it did in 1913, the loss would have been in the neighborhood of \$200,000,000, and without the efforts of Federal and State agents in the proper application of serum and improved methods of handling outbreaks of hog cholera, the program for more meat to meet war conditions would have been a failure.

### **Eradication of Hog Cholera Demonstrated.**

In 1913, the year of the big loss, the Bureau of Animal Industry, with a number of its veterinarians, instituted a series of experiments in the field to demonstrate what results may be obtained by the proper use of serum and the application of sanitary measures in the prevention of cholera. Three counties were selected in the Middle West, and veterinarians were detailed to show the hog growers that it is entirely feasible to eliminate the disease. With the support and cooperation of the local authorities, farmers and

others, these efforts were successful in showing that the eradication of hog cholera is within the bounds of probabilities, and further, a demand was stimulated that has made possible the extension of the work and the suppression of the disease in the principal hog raising States. Success in the further reduction of losses is certain, provided cooperation from the State authorities is continued and it is possible for the Department of Agriculture to offer inducement in the way of increased salaries for trained veterinarians to remain in the service. In the last few years many of these scientists have resigned to accept positions paying considerably more money.

But in spite of the drawbacks, the work of hog cholera control by the Bureau of Animal Industry has been gradually extended from three counties in 1913 until it now covers practically the whole of thirty-four States. There are employed by the Bureau about 165 veterinarians to assist the regulatory authorities of the various States in an effort to eliminate this costly disease of live-stock. The work in its present scope involves sanitary surveys, the investigation of reported outbreaks of hog cholera, supervising and assisting in the treatment of infected herds, cleaning and disinfecting infected premises, establishing quarantine when necessary, applying State and Federal regulations and furnishing assistance and advice to farmers, stockmen, practicing veterinarians and others concerning the proper disposal of dead animals, and methods of prevention and control of cholera. An important phase of the work of Bureau veterinarians has been to assist in formulating and applying State and Federal rules and regulations that require the immunization and proper handling at public stock yards of stocker hogs intended for feeding purposes on the farm, in order that they may be returned to localities where feed is available without danger of spreading infection. These animals are subject to reinspection from time to time, thus assuring safety to the feeder while the hogs are being finished for market.

### Production of Serum Supervised.

Another task that goes hand in hand with the watching of the herd is Federal supervision at serum establishments. All makers



of serum doing an interstate business must hold a license issued by the United States Department of Agriculture and all of the product sold must pass inspection by Federal veterinarians, who have a thorough training in serum production. Under this arrangement the quality of serum has been gradually improved. Last year more than 271,000,000 cubic centimeters of anti-hog-cholera serum were produced by these licensed establishments and only one per cent of this was condemned as unfit for use, while the year previous two per cent of the total output was rejected. Government supervision has improved the quality of the product and the quantity produced has greatly increased until this year the output will greatly exceed that of any former season.

The Bureau of Animal Industry maintains a force of sixty-five veterinarians in the inspection of anti-hog-cholera serum. It is their duty to supervise all steps incidental to the production and handling of serum, such as proper sanitation of the premises, requiring that only healthy animals are used, that all serum and virus is tested for purity and potency, and that the products are properly labeled before being offered for interstate shipment.

With sanitation, the proper use of serum, the judicious application of quarantine measures and the cooperation of farmers and others interested in the production of more and better live stock, there is no doubt that hog cholera, which has menaced the swine industry for nearly a century, will be put away with the cattle tick and other detrimental factors to efficient live-stock production, but the work must go on with renewed energy as we learn more about the disease and as farmers gain more confidence. Inducement must be offered to retain the best veterinarians in the work. A permanent appropriation for this class of activities by Bureau of Animal Industry veterinarians should be regarded as a wise investment. When we consider that the lowest annual loss from hog cholera is sufficient to maintain the work in its present scope for a period of sixty years, it looks as if we have been foolish enough to place a small bet on a sure thing.

## SCIENCE, ENERGY AND COOPERATION WIN— HOW THE CATTLE TICK IS ERADICATED.

One of the most interesting stories in the whole history of the development of science was the direct result of the fight against the cattle tick and Texas fever. Since we have just passed through the most successful year in the campaign to eliminate this costly cattle plague from the Southern States it is worth while to remind ourselves once more of what far-reaching results often come from the apparently piddling pursuits of "bugologists."

About fifteen years ago men of science all over the world took off their hats to the Bureau of Animal Industry when men of its staff, notably Dr. Theobald Smith, were credited with the epoch-making discovery that diseases of animals are sometimes transmitted from one to the other by insects. These men had been given the job of finding out what caused this destructive fever of cattle and how it traveled from cow to cow. They finally reported that the disease was caused directly by a blood parasite and that the blood-sucking tick supplied the transportation. For some time they did not realize what a flock of consequences they had hatched in their little laboratory incubators.

They had hit upon something really new—insects carried disease. When the fact became known an army of scientists in all parts of the world, following the suggestions of these discoverers, began working on the problem of the transmission of various diseases of humans. Before long the discovery was made that the dreaded yellow fever organism is introduced into the system by the bite of a certain mosquito. We now know, too, that malaria is a disease that depends upon a mosquito for distribution. And the end is not yet. The bedbug is supposed to be guilty of carrying various diseases. Just recently medical men have made rough estimates of the losses from different causes during the war, and they say the louse, which includes "cooties," is responsible for at least a million casualties. The terrible typhus is a louse-borne disease and is spread over a large territory.

To be sure this is somewhat beside the point when we're talking about the elimination of Texas fever, but it does serve to show the type of work that has been done and is being done unostenta-

tiously by a corps of several hundred veterinarians who, in spite of low salaries, are making it possible for the South to develop a profitable cattle industry.

Soon after the remarkable discovery had been made other men of the same profession in the same bureau began work on the life history and habits of the guilty tick. They discovered that he spent part of his life on the ground and part of it hanging to the hide of a cow or steer, and that arsenical dips would cause him to curl up and die immediately. Enough facts of this nature were collected to make it clear that the tick could be gradually eliminated by starvation and by poison.

### Quarantined Area Three Times Larger than France.

In the first place, investigation disclosed that nearly three-quarters of a million square miles of the Southern States were infested with this parasite. Cattle could not be shipped freely from this territory. Breeding cattle could not be sent out and improved animals could not be brought in without great danger of the complete loss of the investment. Cattle for slaughter went to the quarantine pens at the various stockyards where they were sold as "ticky." A "ticky" steer usually meant an unthrifty looking animal, and, of course, not a very profitable one. Also an infested dairy cow gives a good deal of the feed that might otherwise go into the production of milk to the insects on her back and sides. Some men estimate that a badly infested cow gives forty per cent less milk than she otherwise would.

That large territory that was originally infested was nearly all below a jagged line that extended from Southwest Texas diagonally across that State and Oklahoma, taking in about three-fourths of the latter, then along the northern line of Arkansas, dipping a little way into Missouri, zigzagging across Tennessee and cutting a small piece out of Kentucky, it finally reached the Atlantic coast by twisting up through western North Carolina and taking in a good-sized piece of southern Virginia. In addition fifteen counties in California were quarantined.

## Cooperative Eradication Commenced in 1906.

In 1906 the first Federal money was available to start the long fight for extermination and for the building of the South's cattle-raising industry. A staff of veterinarians was put on the job and as fast as the States and counties made provisions for co-operation the work went ahead. There was much opposition at first and dynamiting of dipping vats by the unbelievers was of common occurrence. There are still some bad actors who hold out against the good of communities. You can pick them out on the tick map by noting the little black islands and peninsulas that extend into the clean white area.

But the States have found out that local option does not always work well in eradicating the tick and getting a clean bill of health for the herds. There have been many localities where the county courts have refused to provide the funds for carrying on the work. Some of these judges, who have been in office for years and expect to stay, have held out even in the face of popular approval of the cleanup work. Alabama is a conspicuous example. There are also a few counties of this type in Georgia. Mississippi and Louisiana had the same trouble until the Legislatures enacted laws requiring county officials to provide within a certain time a sufficient number of dipping vats and dipping material and requiring that all cattle shall be dipped every fourteen days until the ticks are eradicated. The result was that in Mississippi in 1917 great progress was made and by the end of the year the last square mile was released from quarantine. Louisiana has only a few black counties left and they will be washed white this year. Other States have taken the same means for forcing the backward county courts into the line of progress. The Alabama legislators are going to put through such a law this winter and probably by the end of the year that State will be as spotless as its neighbor to the West.

From this brief reference to the bad actors you will get some idea of what the Federal and local veterinarians have had to contend with. They have had to be stump speakers, and diplomats as well as experts on animal pests and diseases. They are not clock men either. They work when they are needed—four A.M. if that suits the convenience of the cattle owners, and they call it a day when the job is done.

At first most men looked upon the idea of wiping out a little insect from a territory 730,000 square miles in extent as a hopeless dream built up by some over-optimistic Government officials, but now the doubter is the exception. We can figure almost to the day now when the last tick will be backed into the Gulf of Mexico. The last report shows that in 1918 the record was beaten with 79,217 square miles cleaned up. That makes a total of 458,529 square miles released since 1906, or sixty-three per cent of the entire originally infested area.

### **Rapid Progress Exterminating Tick.**

It has taken twelve years to do this work, but it is going more rapidly now, since there has been nearly half a million square miles of demonstration, and it is expected that by 1923 a cow with one lone tick upon her hide will be a curiosity. By that time Texas, which has the largest ticky area, will have killed them all off. In that State a law went into effect on January 1st which provides for systematic dipping of all cattle every two weeks during the dipping season of 1918 in Zone No. 1, which includes about sixty-five counties, an area of 43,000 square miles, in the north-eastern part of the State. Vats are now being built in preparation for compliance with the law.

Out of fifteen States that had tick in 1906, six, California, Kentucky, Mississippi, Missouri, South Carolina and Tennessee, are now 100 per cent clean, and several others have only a few counties to dispose of.

More than two thousand men are now working on the infected areas. There are 350 men from the Bureau of Animal Industry, mostly veterinarians, 350 State inspectors and about 1,400 county inspectors.

These men have made a reputation for doing effective work in spite of the fact that the harder they work the nearer they are to being put out of a job. But unfortunately for the industry there are other diseases even more troublesome than Texas fever that will demand the attention of many experts for a very long time. A good many of the men, however, have been attracted by the prospects in the cattle business in the South and are tempted to



quit their salaried jobs for a chance to accumulate a little of the fat of the land.

## **TUBERCULOSIS MUST BE ERADICATED.**

Everyone who pays any attention to the economic problems of our country or anyone who is interested directly or indirectly in live-stock production knows that bovine tuberculosis is one of the heaviest taxes on one of our greatest industries. When a statistician estimates that the annual loss of cattle and hogs from this cause amounts to \$40,000,000, we are impressed, but we do not get such a clear idea of the actual loss in food as we do from the estimate made by Mr. Brown, president of the Chicago Live-stock Exchange. Last December he made the statement that the loss in a year would amount to approximately seventy trainloads of stock of forty cars each, largely hogs. And this is not all. We can not measure the loss of feed that results when diseased animals are kept in the herd.

### **Stop the Spread of Tuberculosis.**

This great plague is spread from one end of the country to the other, but is most prevalent in the older dairy States. In the South and in most of the range States of the West the percentage of diseased animals is very low. In some of the intensive dairy regions it is estimated that as high as thirty per cent of many herds are diseased.

The Bureau of Animal Industry and the State live-stock sanitary authorities have set out to stop the ravages of this malady and their ultimate object is to wipe it out entirely just as they are now rapidly cleaning out the cattle tick. In those areas that are now only slightly infected the task will not be difficult if care is taken not to bring in diseased animals from other States. If it is cleaned out of cattle and kept out it will soon disappear from hogs as they almost invariably get it from cattle.

Prevention of the interstate shipment of tuberculous cattle is a big factor in stopping the spread of the disease. The importance of this question of distribution may be seen from reports that come from Federal veterinarians in various States. In 1918

Bureau veterinarians in Alabama tested 12,121 head of cattle in cooperation with the State authorities. Of the 10,736 native cattle included, only 42 reacted, or .39 per cent. Of the 1,485 that were brought in from other States 78 reacted, or 5.2 per cent. There was thirteen times as much tuberculosis in the cattle brought in as there was in the natives. Similar results were obtained in other Southern States.

No better argument can be presented against the unregulated shipment of cattle from one State to another. It is just as important to prevent distribution as it is to clean up already infected herds.

### **Tuberculin Test Accurate But Not Infallible.**

The tuberculin test is of course the foundation on which all of this anti-tuberculosis work rests. The newly devised accredited herd plan is, however, a development that promises to be of the utmost importance in making the cleanup plan practicable.

A short time ago veterinarians of the Bureau of Animal Industry of the United States Department of Agriculture were asked to examine and test a herd of pure-bred dairy cattle on a certain farm. There were sixty-six head on the place and the tuberculin test showed that fifty-seven of them were diseased. The owner was astounded, but a post-mortem examination convinced him that the Government men knew what they were talking about and he decided that it would be foolish to continue in the business of producing breeding animals on such a tottering foundation. Only a few years ago he might have scoffed at the idea of cleaning up the herd as the impractical notion of sentimentalists. Now he knows that it is good business.

### **Accredited Herd Plan Asset to Owners.**

Only a short distance from the farm where this diseased herd was located is another large herd of the same breed that has been tested every year for several years. For a considerable period no animal on this farm has reacted to the test and great care is taken to prevent the introduction of unhealthy animals through purchase. The average production of the cows in this herd is high, but the manager considers the fact that a Government certificate

says they are free from tuberculosis is of equal importance in establishing their value. Would a buyer looking for a herd foundation or for new blood hesitate one minute in choosing between these two herds? He would undoubtedly consider it bad business to buy even the clean animals from the badly infected herd.

The fact that the Bureau of Animal Industry has certified that this herd has passed two tests and on both was found absolutely clean has given the prospective buyer confidence and has increased the value of the cattle as well as the price he is willing to give. The name of this farm and the number of cattle in the herd are to be found in the official list published by the Bureau. There is nothing in the appearance of the animals to distinguish them from many that are badly diseased. The veterinarians of the Bureau who tested the two herds mentioned, took photographs of both and not even experienced men could pick the diseased from the healthy by looking at the pictures. Both look to be good herds. No better proof is needed that the tuberculin test is necessary above everything else in the fight to eliminate the greatest cattle plague.

But we have learned through costly and discouraging experience that there are other factors of very great importance in making headway against the malady. For twenty years science has known how to determine with very high accuracy whether or not an animal is suffering from tuberculosis, but the progress toward elimination has been so slow as to be almost imperceptible. Cattle owners had no desire to endanger the public health by selling infected meat or milk, but they felt that the presence of the plague was no fault of theirs and that the losses that must be incurred should be borne by those who would benefit—the general public, including the farmers. Now we have reached a stage which may confidently be called the turning point and from now on the loss from bovine tuberculosis may be expected to decrease at an ever accelerating rate.

The reason for this sudden change to a hopeful aspect is not far to seek. It is to be found in the fact that the problem is now looked upon as an economic one for the nation and the States to solve with the cooperation of cattle owners, and not one which the



farmer should be forced by drastic legislation to solve for the country at his own expense.

The first definite step toward the new policy which promises to do so much for the live-stock industry was taken a year ago last December during the International Live-stock Exposition at Chicago. At that time representatives of the United States Live-stock Sanitary Association and of pure-bred cattle breeders' associations adopted a set of rules and regulations to govern the accrediting of herds of pure-bred cattle and soon after the Bureau of Animal Industry approved them. A year later the rules were changed so as to include grade herds as well as pure-bred herds.

The Bureau of Animal Industry issues periodically a list of all herds of cattle that have been accredited and that have passed the first test. The methods and rules for having a herd accredited are, also, published by the Bureau. When a herd has been brought up to all the specifications the Bureau issues a certificate to the owner. Before a herd can be accredited and the owner be entitled to the much coveted certificate it must be found to be absolutely free from the disease, as far as every human agency and the tuberculin test can determine.

Various rules have been passed in order to insure the reliability of the test and to prevent any spread of the disease. When a herd has been entered as a candidate for a certificate it is subject to close scrutiny by the Government or State officials. They may retest the herd whenever they consider it necessary. Satisfactory evidence of the identity of animals must be furnished. When cattle are removed by sale, death or slaughter, a report must be made, and if the animal is sold, the name and address of the buyer must be given. Cattle that are shipped from one accredited herd to another must be handled in properly disinfected cars.

These are only a few of the requirements but they serve to illustrate how carefully the men who have charge of this work have planned in order to make the certificate "Tuberculosis-Free Accredited Herd," mean exactly what it says. The work is being done on individual herds in forty States and in some places efforts have been started to eliminate the plague from certain areas. Imagine the flow of buyers to those localities that are first able to advertise that every animal in all their herds is free from tuberculosis. It

will be a monopoly worth having. Consider, also, what a stimulating effect will be produced on our foreign trade in live-stock—which our breeders are earnestly hoping for—if only tuberculosis-free animals are sold to the buyers who are now combing our country for stock to replenish their herds.

The very fact that the Government puts its stamp of approval upon herds that have come up to certain specifications is enough to stimulate some far-seeing breeders to clean out every vestige of tuberculosis, but there is even more encouragement available. In the last agricultural appropriation bill Congress provided that the United States may pay indemnity to the owners of cattle condemned on account of tuberculosis. The owner who submits to the supervision of the Bureau of Animal Industry will get one-third the difference between the appraised value and the salvage value of reactors, provided the State, county or municipality pays at least an equal amount.

What have these recent common-sense efforts accomplished? Considering that the accredited herd plan has been in operation nationally only a little more than a year and that the money offer by Congress has been in effect for an even shorter time, the results are most encouraging. The Bureau of Animal Industry feels that the work done in thirty-three States the first year contains promise of great success and possibly final elimination of the great plague. There are now about three hundred herds of beef and dairy cattle that have been fully accredited, North Dakota, Minnesota and Virginia having the most. Somewhere around 1,500 herds have passed the first test. About a thousand pure-bred herds are under supervision being prepared for the first test. More than 3,000 grade herds are, also, being prepared. Here we have a total of more than 6,000 herds that have been under supervision during the past year. Some of these herds are in States that have made no provision to compensate owners, and, therefore, the owners who have reactors get no compensation at all.

### **Tuberculosis Eradicated From District of Columbia.**

In several States and the District of Columbia, efforts are being made to wipe out the disease in certain small areas. In the District of Columbia the Bureau veterinarians have made a convincing

demonstration of the feasibility of cleaning up certain areas. In 1909 the herds contained 18.87 per cent reactors. Now there are less than one per cent.

This plan of fighting the big enemy of the cattle grower and dairyman bids fair to grow rapidly in popularity, and if Congress provides more money, as it is being asked to do, the work will be still more accelerated. However, the greater the demand for supervision and for certificates the greater the need for capable men to make sure that the certificates mean something. We are starting out on a long fight against the worst animal disease in the country and the most important provision for success is a large staff of capable veterinarians who are not perennially subject to salary temptation from the outside.

## MANGE TAKES TOLL OF MEAT AND WOOL.

When winter grips the Western plains and mountains it is not only the biting cold and the driving storm that causes the sheep-man great anxiety. A little louse-like organism about one-fortieth of an inch long—the pest that causes scabies—is what brings on days of worry and sleepless nights. This insidious insect, multiplying on the warm body of its helpless host, saps the animal's strength, causes the protecting fleece to slip away in patches and the sheep falls an easy victim to exposure.

As far back as the history of civilization lets us see this scourge of flocks has been the despair of the shepherd, and even with our boasted knowledge of life cycles of parasites and of insecticides, unending watchfulness and skill are necessary to keep it from spreading and causing disaster to thousands of great flocks, for it possesses an almost uncanny ability to get from one place to another. Where sheep are trailed long distances to grazing grounds a whole State may become dangerously infected before the disease is known to be well started if expert guardsmen are not on the lookout and if laws are inadequate.

A similar mange affects cattle, but it is produced by a different mite that will not live on a sheep. The one that causes the most trouble in both cases is the common mange mite. The books and bulletins call them *Psoroptes ovis* and *Psoroptes communis bovis*

to distinguish them from each other and from the various relatives that produce similar inconveniences and misery for sheep and cattle and losses for the owners. But for convenience here "mange mite" or "scab mite" or any name such as pest or plague or scourge can be taken as meaning either the one that attacks cattle or sheep or both of them—the common ones that cause the most damage.

Formerly scabies was the greatest drawback from which the sheep industry suffered and it was once one of the greatest hindrances to profitable beef production on our Western ranges. However, the work of the Bureau of Animal Industry in cooperation with State live-stock sanitary officials has gradually brought the disease under control except for occasional spreads, and if experienced men can be kept on the job and money is provided it will be driven out before many years.

### **Mange Eradicated by Dipping Cattle.**

The discovery that certain dips such as nicotin or lime-sulphur solution would kill the mites on the animals lead to the making of dipping regulations by the Bureau and by many of the States where the disease was prevalent. It was found that one dipping freed an exposed animal if done within a few days after exposure and that a second application on affected animals within ten or twelve days got those that hatched since the first without giving them time to lay any eggs themselves. Dipping vats, which are much more effective than spray pumps, have been built in all localities where cattle and sheep are affected. Every year millions of sheep and cattle are given either one or two dippings.

Good progress has been made in recent years in the fight toward ultimate eradication of the disease from every nook and corner of the country, but last year there was a big increase, particularly of sheep scab. The disease broke out in various localities and spread widely in several Western States, and in not a few instances scabby sheep have found their way to farms in the Corn Belt, and even as far east as New York State. Most of this disease recently discovered in the central and eastern feeding sections no doubt came from farther west on exposed sheep that had not been given the one precautionary dipping, because officials did not know of the exposure,

or it came on sheep that had not been properly dipped because of "green help" recently taken on.

Cattle scab has also been on the increase in recent months, but cattle men are not suffering to any such serious extent as the sheep men. Scabies of cattle is pretty well under control and there is much less of it in the country than there was five years ago. Still there are more infected herds than at this time two years ago.

Compared with some of the other diseases and pests that prey on the stockmen's herds and pocketbooks these mites that produce sheep and cattle scabies are of minor importance under ordinary conditions when the prescribed precautions are taken. It is estimated by men thoroughly acquainted with conditions that, in view of the increase in the disease and the high prices of meat and wool, the annual loss is about \$8,000,000 on sheep and cattle. This big loss, which really amounts to a tax of more than a dollar on every farmer in the country, is due to death of stock, reduced thrift and damage to fleeces. But in addition to this drain on these industries we have to consider the cost to the owners of dipping their animals and the cost to the Government for the field inspection and other work that is necessary to keep the plague from destroying a large part of the meat producing industry, which it might very well do if it were not fought every month in the year. It is estimated that it costs the ranchers and farmers around \$2,000,000 to dip the seven million sheep that were treated in the six months beginning the first of last July.

Aside from the direct loss of damages and costs there is a depressing effect on the industry to be taken into account. Iowa sheep feeders who had an experience with the disease this year—there were forty scabby shipments from that State in January—were discouraged, especially those who had just tried the business for the first time. Many of them wrote to the United States Department of Agriculture and to the farm papers saying that they had ventured into sheep feeding once and that it would be the last time. That attitude is a good indication of what a destructive disease scabies can be when it gets a start. It is not difficult to imagine what the feeling is in a county where 12,000 scabby sheep are discovered as was the case in a county in one Western State in January. That means many more thousands exposed.



The experience of the past year may seem to argue a poor system used in combating the disease. But there is nothing wrong with the system, for it has been working very successfully for many years and hope was entertained that before long the plague would be entirely eliminated. Veterinarians and lay inspectors are continually at work in all the principal sheep and cattle States and at all the public stock yards where an interstate business is done. During four months beginning the first of last September, 229 shipments of scabby sheep were found by inspectors at various central markets. This meant that every separate shipment was traced all the way back to the ranch or farm on which it originated and in all these 229 cases everything that was possible, considering men available and the provisions of the State laws, was done to prevent a spread to other flocks and to other localities. Altogether during the last year Bureau veterinarians in the field supervised the inspection and dipping of more than thirty million head of cattle and sheep—about twice as many animals as the total of all kinds received in one year at the stock yards in Chicago. And most of this work is done in sparse-grass territory where the number of cattle or sheep per square mile is very small.

The difficulties that come in the way of cure and prevention are many and various. In one section last year where there was an outbreak of cattle scab the drouth was so severe that it was impossible to get water with which to do the dipping. The cattle were out on the range and got their water from creeks and water holes that had not yet dried up, but it was not possible to drive them into the corrals to be dipped even if there had been enough water for dipping as there would not have been enough for the cattle to drink. That is one example of the troubles that beset the men who are trying to eliminate this disease.

### **Large Force Fighting Mange.**

In the spring and summer there are ordinarily about one hundred men from the Bureau of Animal Industry in the field engaged in the campaign against scabies. During the heavy marketing season there are nearly two hundred veterinarians and other trained inspectors at the various stock yards who look for scabby cattle and sheep. In the past most of these men have been efficient, well-

trained workers, but since we entered the war and since salaries offered in other places have risen so noticeably it has been practically impossible to keep them. They have left by the dozens for more remunerative positions. Some of the veterinarians are now doing professional work in other places and quite a few have gone into entirely different work. Not a few of them went into the Veterinary Reserve Corps of the Army where they started in at \$1,700 a year. Many of these men had been working for \$1,500 in the Bureau. Serum manufacturers and packers have pulled a considerable number away from their Government jobs by salaries ranging from \$2,000 to \$3,000 a year. The States in many instances pay more for their veterinary brains than does the Federal Government and consequently another leak is found there. Montana, for instance, pays her deputy "vets" \$2,100 a year. One lay inspector who had been working for less than the veterinarians get quit his job recently and went to work for the C. M. & St. P. R. R. at \$200 a month. Cattle and sheep raisers in the West have taken quite a number of veterinarians as managers at good salaries and others have gone into the stock business for themselves. One in California who had been with the Bureau for twelve years recently quit and went to raising hogs and alfalfa in that State. Several experienced lay inspectors have resigned to enter railroad service—*more money*.

There are many veterinarians and others in this disease eradication work for the Department of Agriculture who are deeply interested and are determined to see it through even though they could make more money somewhere else, but the result has been in far too many cases that when a man has accumulated enough experience to be considered a top notcher he quits.

Here, then, we have a reason for some of the losses that have been coming to sheep and cattle raisers and also to other stock growers. It not only concerns these men, but the whole country that depends upon them to supply meat at a reasonable price. What will make our live stock safe? The answer is easier to find than the age of Ann.

## FOR HEALTHY LIVE STOCK AND HEALTHFUL MEAT.

If an American consumer could see spread out before him on the butcher's marble counter all of the meat and meat products he consumes in one year he would be astounded. And if a foreigner, other than a Britisher, were a bystander he would be flabbergasted at the sight of such an exhibit of red victuals, for we are the greatest consumers of meat in the world, not excepting the burly Briton, who is a rather bad second. The average for every man, woman and child in the country is more than 150 pounds in twelve months, and that includes only beef, pork, mutton and lard. Poultry, fish and game are extra.

We can get another point of view on this big meat appetite by taking a look at the Chicago stock yards, the largest institution of the kind in the world, but only one of many large ones in the United States. At this great central market there are 500 acres of cattle, sheep and hog pens; twenty-four railroads pour the live stock produced on the farms of the Mississippi Valley into the mighty hopper. The stream grows steadily. In 1918 this one center slaughtered 2,563,572 cattle, 6,692,697 hogs and 2,601,867 sheep—a total so enormous as to make steers seem like pebbles and shotguns like grains of sand. Yet there are many more markets drawing in their millions. The total of animals slaughtered last year in all plants on which records are available amounted to 58,629,612.

### Label is the Guarantee of Wholesomeness.

With such numbers careful inspection of each individual would seem impossible; nevertheless, each animal is carefully inspected when alive and again at the time of slaughter. There are a great many individuals who give their personal attention to a certain part of each animal. And one individual who leaves his mark on every carcass is the inspector detailed by the Bureau of Animal Industry of the United States Department of Agriculture. He is the gallant knight in white uniform who protects the public against the ever-threatening dragon of disease. How many of us when we make a purchase of the meat man take note of the little circle of



indelible ink on the quarters of beef or on the hog or sheep carcasses! Yet it is one of the most important things about that meat. Inside that circle in the same kind of ink appears the statement U. S. INSP'D & P'S'D—meaning United States Inspected and Passed. That is our assurance that a trained Federal veterinarian has examined the animal before and after slaughter and has found it fit for human food. Sometimes the Government stamp appears in a different form. On hams and sides of bacon it is a mere straight line statement. It appears on the labels of package goods and every label used on meats and meat products that go into interstate or foreign commerce must be approved by the Meat Inspection Division of the Bureau of Animal Industry. These labels are equivalent to the "GO AHEAD" signs at busy street crossings. They mean safety—that the animals were healthy, that they were handled in sanitary packing houses and that chemical preservatives and colorings were not used.

It has not been very long since Uncle Sam became so watchful of the meat supply, but he now has the best inspection system in the world and it has brought him business from across the seas. The first law providing for inspection was passed back in 1891. Certain foreign governments that were desirous of shutting off our growing trade in meat had put up prohibitions and restrictions, claiming that much of our product was unsafe for human consumption. The establishment of Federal inspection at that time saved a large part of our export trade in meat and since that time American meats and meat products sent to other countries have been received with good grace and a good appetite.

The meat inspection law which now protects American consumers and foreign buyers as well and which is of inestimable benefit to the live-stock industry, was passed by Congress in 1906. It is administered by the Bureau of Animal Industry which issues new rules and regulations from time to time as changing conditions require. The law applies to all slaughtering, meat canning or similar establishments that do an interstate or foreign business. Inspectors, who are graduate veterinarians, made ante-mortem and post-mortem examinations of cattle, sheep, swine and goats. Inspectors make an examination of all meat food products prepared from these animals. If upon examination before slaughter an

animal is suspected of being unfit for human food it is sent to a special place for special examination. Such carcasses and parts of other carcasses that are found undesirable as food are "tanked," which means they are denatured, cooked up under steam pressure and made into such products as hog feed and fertilizer. Condemned carcasses are always plainly marked by the inspectors and great care is taken to see that they are disposed of as the law provides.

Since this improved and extended inspection service was established in 1906 a great improvement has been brought about in the construction of packing houses, in their equipment and in the methods of handling and putting up meats. Wood construction was replaced by impervious concrete; rough surfaces gave way to smooth, facilitating cleaning; artificial light was supplanted by natural light so far as possible; better drainage systems were put in; ventilation was improved so as to do away with odor-laden air; the water supply is regularly examined in laboratories; excellent facilities have been provided to enable the workers to keep themselves clean.

The benefit that the public receives from this Government inspection of animals and meats is obvious as we all know that animals have diseases and we feel instinctively that meat from them is undesirable as food. But from what are we protected? Where do the inspectors draw the line? They certainly would not be guilty of wasting valuable meat simply because a pig had the snuffles or a steer had a mild case of lumpy jaw. If such were the case our friends, the vegetarians, would soon have more company than they ever expected. A brief list will show what some of the causes of condemnations are. Such serious diseases as pneumonia, hog cholera, rabies, blackleg and septicemia often throw animals out on examination before slaughter. There are some other causes also.

### **Diseases Detected Are Many.**

When it comes to the examination of carcasses at the time of slaughter the list of causes of condemnation is long. It includes tuberculosis,—the most common—pneumonia, injuries, emaciation, hog cholera, Texas fever, inflammation, contamination and many more that only a veterinarian would understand. A glance at the list, however, is sufficient to convince the layman that a veterinarian who holds one of these inspection jobs, even though he is working for less than a

packing plant butcher, must know considerable about animal diseases and conditions and must be wide-awake all the time.

Much of the meat packing is done by a few large concerns, but, nevertheless, there are many small ones and at each one of these if it does an interstate or foreign business there is one or more Federal inspectors. Last year inspection was carried on in 884 establishments in 263 cities and towns. Close to sixty million animals were examined both before and after slaughter. The total was made up of more than 35,000,000 hogs, 11,000,000 cattle, 3,300,000 calves, 8,770,000 sheep and 150,000 goats. Out of this large number the inspectors threw out as unfit for food more than 200,000 animals or carcasses and more than 500,000 parts of carcasses. That much unfit food kept from American tables or from the tables of our European customers! Does anyone doubt that careful well-trained men are needed on this health-protecting work?

In addition to this direct examination of animals and carcasses the Government inspectors saw to it that the materials used were of the permitted kind. Their inspections and reinspections aggregated eight billion pounds of meat and meat products. There was also inspection of public markets in forty-three cities. Large quantities of meat were certified for export. Some fifty-nine million pounds of imported meats were inspected. Expert veterinarians were loaned to the War and Navy Departments during the war. The Bureau placed inspectors at seventy-one camps to protect the meat supply of the soldiers and at forty-five places to inspect the meat that was taken by the navy. At the laboratories in Washington and six other cities examinations are made of meat food products to determine whether they are properly labeled or whether or not they contain deleterious substances. Tests are also made of substances that are used in any way in the preparation of meats and products—water, spices, salt, and even such things as disinfectants, insect exterminators and rat poisons that are used around the plants. In 1918 more than 64,000 samples of various kinds were examined. The work done to protect the food supply of the army and navy swelled the total considerably. The search for poisons and powdered glass took precedence over all other work.

## Diseases Traced and Eradicated.

But not all the benefit of this work of the inspectors falls to the consumer. The producer also gains. This protective agency which employs from 2,600 to 2,800 men is the most effective means we have for locating animal disease. Serious outbreaks are prevented through the close watch kept at stock yards. The origin of diseased animals found at these yards and in the packing plants may be traced even to the farm where they were raised or fed. Such information is of inestimable value in fighting the plagues and pests of live stock.

In our efforts to reduce the costs of food production the elimination of disease is one of the first factors to be considered. But to do that the country needs the services of the best men it can get. Success will not come while veterinarians who have been trained in this special work are being lured into various commercial fields even though they are valuable there. It is nothing unusual to find Federal inspectors working for \$1,800 a year or less suddenly leaving to take positions with the packers or with municipalities at salaries ranging from \$2,500 to \$3,500 a year.

For the sake of the public health and the welfare of the live-stock industry wouldn't it be wise to invest a little more in what amounts to insurance?

## LITTLE LIVE-STOCK LOSSES MAKE \$100,000,000.

The drain that live-stock diseases impose on the average pocket-book every year is easy to figure out from estimates that are supplied by the experts in the Bureau of Animal Industry. It amounts to about two dollars each for every man, woman and child in the country. That is the direct loss, and there is more, to be sure, that we have no means of getting at in any accurate way. However, every householder may be sure that if it were not for these losses and risks meat and milk would be furnished at a lower price.

The big three that cause about half of the \$200,000,000 disease loss are Texas fever, tuberculosis and hog cholera. The first one we are going to be rid of very soon and our veterinarians have found ways of successfully combating the other two. There is

reason to hope that they will, with the co-operation of farmers and breeders, finally wipe them out or at least make the losses negligible.

But there is a long list of what in ordinary times are minor diseases that ring up a grand total of \$100,000,000 on the debit side of the national account. Some of them are being fought to the last ditch right now, but others are still so little understood that at present sanitation and common sense are the principal weapons in use against them.

Foot-and-mouth disease, which was pretty near a household word in many localities a few years ago, can hardly be classed as a disease of American live-stock since it was thoroughly cleaned out. But it causes expense even now, as the Field Inspection Division of the Bureau of Animal Industry maintains a constant patrol to prevent a recurrence of this dreaded plague that at the last appearance, in 1914, caused a total direct and indirect loss that could not have been less than \$20,000,000. Whenever a report of a suspicious case comes to headquarters one of the special experienced men in that section is sent post haste to make sure. A good-sized emergency fund provided by Congress is now kept on hand to cope with an outbreak if a droplet of the virulent virus should get inside the country. It requires extremely capable men to handle this disease, but if those who have received the costly training remain at their posts America stands a better chance than ever before of remaining free.

Out in the range country there is a contagious blood disease of breeding horses, called dourine, that has caused big losses in some localities and on occasion it has spread to farming sections. Dourine strikes at a vital spot in the industry as where it exists colts can not be raised. There is no remedy for the individual. Animals that react to the blood test must be killed to make the others safe. In 1918 more than one thousand infected horses were killed.

If the affected areas were confined to the farming states it would be a simple matter to get rid of them, but unfortunately they are mostly in range country—in North Dakota, South Dakota, Montana and Wyoming where the best range horses are produced. There are also some large areas in Arizona and New Mexico, particularly on Indian reservations where a complete cleanup is difficult on account of the rough country where the half-wild ponies range.



## Disease Fighters Specially Trained.

The Bureau veterinarians who fight this disease must not only have scientific training, but they must know how to rope a horse and must be supplied with plenty of nerve. To draw a blood sample from the jugular vein of a bucking, biting broncho is no child's play. It is dangerous for the man and for the horse. This versatile "vet" must have a knowledge of values so as to be able to act as one of the appraisers, for the Federal, State and county governments pay for the horses that are killed, and then he may finally be called upon to do the actual killing of the reactors.

In recent years dourine has appeared in the draft horse breeding States of Iowa and Nebraska, but has been driven out, and steady progress is being made toward final elimination in other States.

There are some diseases of animals that attract our attention more forcibly than others when they are close at hand for the very good reason that they may kill men too. Among these is the deadly anthrax whose spores live in the soil perhaps for twenty years. Nearly all of our domestic animals are susceptible to it. The biggest losses have been suffered in the Gulf Coast States and in California, but it has appeared in various parts of the United States. In 1917 four Texas counties alone lost forty thousand animals from anthrax.

There is a vaccine that prevents a fatal form of the disease if given before hot weather, the usual time of an outbreak. Stockmen need suffer little loss from this cause if they avail themselves of the assistance of the vaccine. Every carcass of an anthrax victim should be burned—not buried. That one rule will have much to do with preventing losses in the future.

Glanders has been known for ages as one of the great enemies of the horse. The horse not infrequently gives the disease to his master. Not many years ago it was quite prevalent in the West and also in the large cities, but gradually we have been getting the better of it. During the war when large numbers of horses were brought together there was an increase, but there is now little reason to believe that it will not soon be eradicated. The mallein test, developed in Europe and adapted to American conditions, is a means of determining for a certainty whether a horse has glanders. If he reacts he should be killed. Sanitation is the all important

measure to stop the spread of the malady. In the past one of the greatest spreaders was the public watering trough in the cities. Most of them have been eliminated as a result of campaigns by veterinary officials, but some cities still keep them and those cities still have what they might expect to have—more glanders than other cities.

### **Veterinary Service Helpful in War.**

During the war influenza of horses has been receiving a great deal of attention as an emergency measure. The veterinarians of the Bureau are working on the problem of a preventive agent, but so far none has been discovered that gives satisfactory results. However, the losses have been very largely cut down by enforcing sanitation and segregation regulations at central markets, country stock yards, livery stables and all places where horses were brought together for sale to the Government.

If cattlemen would all take advantage of the means now at hand for fighting blackleg, the yearly loss of \$6,000,000 could, according to one of the Federal veterinarians in charge of eradication work, be reduced almost immediately to \$1,000,000. Even the present big loss is fifty per cent less than it was fifteen years ago. The Government scientists have developed a vaccine that is effective and is quite generally used, but owners frequently delay its application until they have lost one or two animals. In infected localities all young cattle should be vaccinated before the time blackleg usually makes its appearance. Cattle owners know when it comes in their locality. The Bureau is now preparing to make free distribution of large quantities of vaccine, a move that should do much to reduce the loss toward the vanishing point.

One disease that ought really to be classed with the big three mentioned in the beginning is contagious abortion of cattle which, it is estimated, annually causes a loss of \$25,000,000 to the beef and milk producing industries. It is with difficulty that progress is made against this insidious disease for no dependable preventive has been found and there is no cure except gradually acquired immunity. Scientists in the Department of Agriculture are working for more definite information. They are trying to learn more about how it is disseminated and are developing new methods of study.

Cattle owners may well give all possible encouragement to such investigations that may some day mean millions to their business.

Although about nine-tenths of the employees of the Bureau of Animal Industry are scattered far and wide over the United States, there is a large staff of men in Washington. Much of the experimental work on diseases is done there. Stock growers do not hear of much of this work that veterinarians, pathologists, chemists and bacteriologists are doing until something has been discovered that will give practical results. But they should be interested to know that one division—the Biochemic—spends much of its time hunting for more information on hog cholera, examining dips and disinfectants, and searching for better methods for the disinfection of hides to help stop the spread of disease. The men in this division make hundreds of thousands of doses of tuberculin and mallein for testing cattle for tuberculosis and horses for glanders. Last year they furnished the War Department with nearly a million and three-quarters doses of mallein for testing army horses and mules.

In this brief article the "shotgun" method has been used to show what a variety of jobs the veterinarians and other trained men of the Bureau of Animal Industry are working on. Every undertaking is really a big one, for the American live-stock producer is doing things on a large scale and what looks like a small matter in one locality becomes a big loss to the nation if permitted to go on.

## ARRESTING ALIEN ENEMIES OF LIVE STOCK.

The United States now has more live stock on hand than ever before in its history. According to calculations made by the Bureau of Crop Estimates on the first of January American farmers had 21,500,000 horses, nearly 5,000,000 mules, more than 23,400,000 dairy cows, in excess of 44,000,000 other cattle, about 50,000,000 sheep and over 75,000,000 hogs. Part of the recent increase is no doubt due to war prices and the appeal on the part of the Government for more food, but a factor not to be ignored is the better protection now afforded against destructive diseases.

Such a thriving live-stock industry as we have developed would not have been possible if the plagues that rage in various countries of the world had been allowed to become prevalent here. The man



on the street knows little about the protection that is continually maintained to keep our ten billion dollars worth of animals safe. He knows about the Secret Service that guards the State against various enemies. Even if he does not know the facts he is sure to be acquainted with the fiction that has been woven about the prodigies of craft who on Uncle Sam's behalf outwit these enemies. But the chances are that he never heard of the Quarantine Division of the Bureau of Animal Industry of the United States Department of Agriculture. Yet the men of this service do not work in secret. They have offices in our ports, in various towns and cities on the borders and at the big live-stock markets, and some men are stationed in foreign countries that ship much stock to our shores.

Even before the Bureau of Animal Industry was organized, in 1884, there was a Quarantine Division for the purpose of keeping out animal diseases. In the beginning it was a part of the Treasury Department. Men interested in American agriculture in those days saw the danger that was coming with better transportation and more world trade. They also saw that as our live-stock population became denser disease would spread more rapidly and more extensively and would be harder to eradicate.

### Investigations in Foreign Countries.

The men who have charge at the various stations of the Quarantine Division are trained veterinarians and they are particularly well equipped to recognize the plagues that are most dangerous to our industry. Outside of the staff in Washington there are around forty trained men who devote all their time to watching the condition of the four-footed animals brought to our shores or over our borders and enforcing the regulations. Many more men in the Bureau of Animal Industry give part of their time to this work.

Once in a while it is deemed necessary to look up conditions in countries that ship stock to this country and experts on diseases are sent there, usually for only a short time. However, a representative is kept in England continually and formerly two were kept there. This is on account of the large volume of business in live stock between the British Isles and this country. The inspector in the London office of the Bureau of Animal Industry makes an inspection of all live stock shipped to this country and tests all

cattle for tuberculosis. He also keeps informed as to outbreaks of disease in the islands. The British Government to be sure always notifies this country of any outbreak of a dangerous disease, but a special representative furnishes more detailed information and often earlier.

For a period of two years the Bureau had a veterinarian studying live-stock conditions in Argentina, Uruguay and Brazil. Men have also been sent to Colombia, Santo Domingo, Honduras, and to Porto Rico before it became a part of the United States.

The Chief of the Bureau of Animal Industry through the Quarantine Division has control over practically any kind of animal that a man might desire to import. Most domestic animals such as cattle, sheep, horses, mules, asses, swine, goats and dogs are mentioned in the regulations, but the Chief may take action regarding any kind of domestic or other animal. Menagerie specimens must go into quarantine so that we may be sure they are free from any infectious disease that could be transmitted to our domestic animals.

The men whose duty it is to keep out contagion have no small job on their hands. Among other things, they must look for indications of glanders and farcy, dourine, distemper or strangles, epizootic lymphangitis, anthrax, contagious pleuropneumonia, splenic or Texas fever, tuberculosis, foot-and-mouth disease, rinderpest, surra, variola, foot rot, scabies, hog cholera, swine plague, swine erysipelas. Some of these diseases are well known in this country. Some of them, for instance, foot and mouth disease and contagious pleuropneumonia, have bothered us occasionally but have been wiped out. It was an outbreak of the latter disease in our cattle in 1884 that resulted in the establishment by Congress of the Bureau of Animal Industry.

### Fight to Keep Disease Out of Country.

Extreme precautions are taken against the possibility of introducing the more dangerous diseases that are not present in this country. Contagious pleuropneumonia, a very destructive disease of cattle, exists in the herds of Australia and in order to be sure that our herds do not get that contagion again we prevent absolutely the importation of cattle, sheep or swine from that continent. New

Zealand, however, is free from the contagion and importations are permitted. We get some sheep from those islands.

When foot-and-mouth disease breaks out in this country, as it does occasionally, the infection usually comes in some roundabout way from continental Europe or from South America. Therefore, the guardians of our live stock say that no ruminants or swine can come to our shores from those countries.

In Asia and Africa there is a terrible plague known as surra. It kills great numbers of animals and no cure is known for it. The introduction of such a disease would be a calamity to our breeders and farmers and, therefore, the Government takes no chances. All domestic animals from those countries are barred from our ports. Wild animals for menageries and zoological parks can be brought in under special permission and thorough examination and quarantine.

The only animals that can be brought to this country from the Philippine Islands are monkeys for use in experimental work in laboratories. They must be brought over in cages closely screened against flies and they must be shipped at once to the laboratory that is to use them.

There is a specially careful examination of dogs at the quarantine stations. Sheep dogs, and this includes German police dogs, collies and shepherds, from many foreign countries are the hosts for a certain tapeworm which is one stage of a parasite that causes gid or staggers in sheep, a very destructive disease.

Not only are precautions taken with the animals themselves, but hay and bedding are carefully examined and disinfected. Ships and cars that are used for these animals must be cleaned and disinfected according to regulations that have been carefully worked out. It is indeed a hardy and a slippery germ that can get through the lines of defense. The animals are examined in the country of origin before they are shipped, then again on the boat before they are landed at our port, again on land and finally after they have been kept in quarantine for periods varying with the kind of stock and its origin. When it is discovered by an inspector that animals are affected with a contagious disease or exposed to it they are either prevented from being landed or are put in special quarantine. In case of certain diseases the animals are appraised and slaughtered.

The same officials who are so careful to prevent the entrance of dangerous animal plagues into this country also keep watch on animals going out so that the United States may not be guilty of infecting the herds and flocks of other countries with the diseases we have here. All cattle exported for breeding purposes are tested for tuberculosis by Bureau veterinarians. Certain countries such for instance, as Canada, Argentina, Brazil and Uruguay, require that there shall have been no hog cholera nor swine plague within five miles of the farm on which the shipment originated within six months preceding the day the hogs were shipped. Just to be sure our export stuff is free from cholera we make this rule apply to all breeding swine exported.

### Our Chance to Develop Foreign Trade.

For a long time continental Europe would not receive any of our cattle except for immediate slaughter, giving fear of disease as the reason. France has now taken down the bars and a shipment of one hundred dairy cows is now being assembled at the port of New York by the French High Commission for export to France. These animals will be tested for tuberculosis before leaving this country.

The men who have been doing this important part in protecting the wealth of the nation have an excellent record behind them. It is very seldom that an animal having one of the more dangerous contagions ever sets hoof upon our shores even in a quarantine station. Since the beginning no dangerous outbreak has been traced to a break in the wall maintained by the Quarantine Division. Since the organization of the Bureau of Animal Industry, of the several epizootics of foot-and-mouth disease not one has been traced to infection that came through on live animals.

The more our live-stock population grows and the more valuable the herds and flocks the greater is the need for the best men that can be found for this first line of defense. One little slip might possibly destroy all the industry had gained by years of careful breeding.



